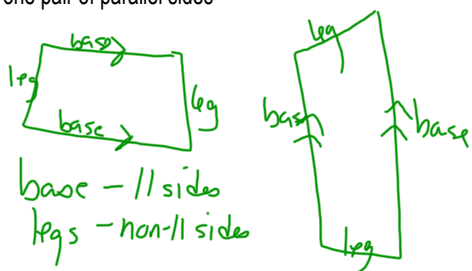


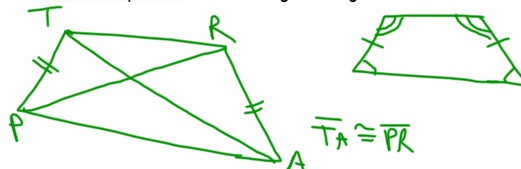
## 8-6 Trapezoids

trapezoid --quadrilateral with exactly one pair of parallel sides



isosceles trapezoid

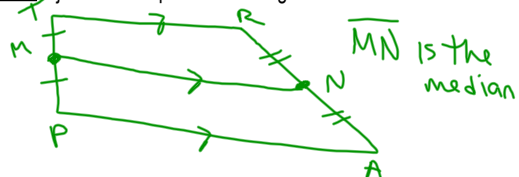
-- congruent legs



Theorem 8.18--Both pairs of base angles of an isosceles trapezoid are congruent

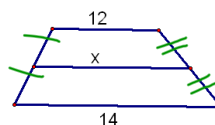
Theorem 8.19--The diagonals of an isosceles trapezoid are congruent

Median --joins the midpoints of the legs



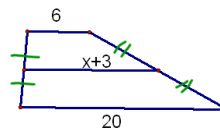
Theorem 8.20--The median of a trapezoid is parallel to the bases and =  $\frac{1}{2}$  the sum of the bases

$$\overline{MN} \parallel \overline{TR} \parallel \overline{PA} \quad \star \quad MN = \frac{1}{2}(TR + PA)$$



$$x = \frac{1}{2}(12 + 14)$$

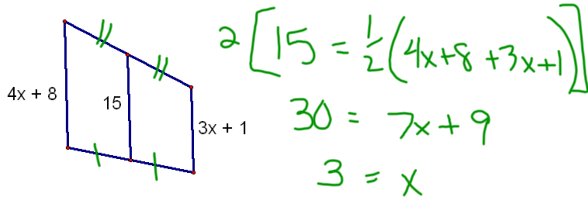
$$x = 13$$



$$x + 3 = \frac{1}{2}(6 + 20)$$

$$x + 3 = 13$$

$$x = 10$$



Verify that ABCD is a trapezoid.

A(5, 1)  
 B(-3, -1)  
 C(-2, 3)  
 D(2, 4)



$$\overline{AB} \quad m = \frac{1}{4}$$

$$\overline{AD} \quad m = -1$$

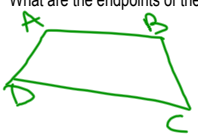
$$\overline{DC} \quad m = \frac{1}{4}$$

$$\overline{BC} \quad m = 4$$

ABCD is a trapezoid (one pair of  $\parallel$  sides)

What are the endpoints of the median?

A(5, 1)  
 B(-3, -1)  
 C(-2, 3)  
 D(2, 4)



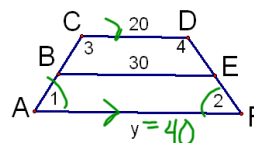
$$\overline{AD} \quad M \left( \frac{5+2}{2}, \frac{1+4}{2} \right)$$

$$\overline{BC} \quad M \left( \frac{-3-2}{2}, \frac{-1+3}{2} \right)$$

Is it isosceles? No

$$AD = \sqrt{9+9} = \sqrt{18}$$

$$BC = \sqrt{16+1} = \sqrt{17}$$



Isosceles trapezoid ACDF

 $\overline{BE}$  is median

$$m\angle 1 = 3x + 5$$

$$m\angle 2 = 6x - 5$$

$$30 = \frac{1}{2}(20 + y)$$

$$60 = 20 + y$$

$$40 = y$$

$$3x + 5 + 6x - 5 = 180$$

$$9x = 180$$

$$x = 20$$

$$m\angle 2 = 65^\circ$$

**HW**

p442-443

9, 11, 13-19, 22, 25